operation. The '710 patent also describes representative algorithms that utilize a non-binary computing medium for mathematical operations such as addition, subtraction, multiplication and division. U.S. Pat. No. 6,714,954 (the '954 patent) ~~Appl. Ser. No. 10/155,527 (the '527 application)~~ by Ovshinsky et al., the disclosure of which is hereby incorporated by reference herein, describes further mathematical operations based on a phase-change computing medium, including factoring, modular arithmetic and parallel operation.   IDC-a3,AMD,M

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Please replace the paragraph beginning on line 5 6 of page 4 with the following replacement paragraph:

In U.S. Pat. No. 6,999,953 (the '953 patent) ~~Appl. Ser. No. 10/189,749 (the '749 application)~~, the disclosure of which is hereby incorporated by reference herein, Ovshinsky considers the architecture of computing systems based on devices utilizing a phase-change material as the active computing medium. More specifically, Ovshinsky considers networks of phase-change computing devices and demonstrates functionality that closely parallels that of biological neural networks. Important features of this functionality include the accumulative response of phase-change computing devices to input signals from a variety of sources, an ability to weight the input signals and a stable, reproducible material transformation that mimics the firing of a biological neuron. This functionality enables a new concept in intelligent computing that features learning, adaptability, and plasticity.   IDC-a4,AMD

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In U.S. Pat. Nos. 9,967,433 ('344 patent) and 6,969,867 ('867 patent) and U.S. Pat. Appl. Ser. Nos. ~~10/384,994 (the '994 application); 10/426,321 (the '321 application);~~ 10/657,285 (the '285 application), and 10/761,022 (the '022 application), ~~-~~the disclosures of which are hereby incorporated by reference herein, Ovshinsky et al. further develop the notion of phase-change computing by discussing additional computing and storage devices. The '344 patent ~~'994 application~~ discusses a multi-terminal phase-change device where a control signal provided at one electrical terminal modulates the current, threshold voltage or signal transmitted between other electrical terminals through the injection of charge carriers. The '867 patent ~~'321 application~~ describes a related multi-terminal device that utilizes a field effect terminal to modulate the current, threshold voltage or signal transmitted between other terminals. The devices described in the '344 and '867 patents ~~'994 and '321 applications~~ may be configured to provide a functionality analogous to that of the transistor that is so vital to silicon based computers. The '285 application presents multiple-bit storage devices having multiple terminals that utilizes a phase-change material. The '022 application describes multi-terminal logic devices that utilize a phase-change material.

IDC-a5,AMD

IDC-a6,AMD,M

The registers included in an embodiment of the instant secured devices have been previously described in the '710, '954, and '953 patents ~~patent and in the '527, and '749 applications~~ and include two-terminal phase-change devices. The weighting devices have been

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